

IN THE CLAIMS:

Please amend the claims as follows. No new matter is introduced.

1. (Currently Amended) A computer implemented method for imaging and identifying non-viable myocardial tissue in a patient's heart, the method performed by the computer comprising the steps of:

obtaining images of a section of the myocardium;

segmenting an endocardial border and epicardial border of the section of the myocardium;

dividing the segment of the section of the myocardium into sectors;

measuring ~~one or more~~ a plurality of selected features of the sectors of the myocardium;

applying the measured plurality of ~~one or more~~ features to a decision function to create a decision surface;

determining from said decision surface whether each sector contains viable or non-viable myocardial tissue; and

displaying an image that shows each sector of the myocardium and an indication of its viability,

wherein said steps of obtaining images, segmenting an endocardial border and epicardial border, dividing the section into sectors, measuring a plurality of selected features, determining whether each sector contains viable or non-viable myocardial tissue, and displaying an image are performed by a computer processor.

2. (Original) The method of claim 1 wherein the images obtained are using Delayed Enhanced Magnetic Resonance (DEMR) imaging.

3. (Original) The method of claim 1 wherein the section of the myocardium is a left ventricle.

4. (Currently Amended) The method of claim 1 wherein said features are selected from a group comprising a selected feature is image intensity, thickness of the myocardium, differential thickness of the myocardium, homogeneity of the myocardium, transmural of scar (non-viable) tissue, a position of the sector of tissue, a rate of contrast agent uptake, and material strain information from tagged-MR.

5-11. (Canceled)

12. (Currently Amended) The method of claim 1 wherein the decision function that $\mathbf{x}$ creates said decision surface is a function $f(\mathbf{x})$ that maps a multidimensional vector $\mathbf{x}$ formed of said selected feature measurements to a scalar real value indicative of whether a tissue sector is viable or non-viable.

13. (Previously Presented) The method of claim 12 wherein said decision surface separates measurements identifying viable tissue sectors from non-viable tissue sectors.

14. (Original) The method of claim 1 wherein sectors of viable tissue are displayed as a first color and sectors of non-viable tissue are displayed as a second color.

15. (Currently Amended) A program storage device readable by a computer, tangibly embodying a program of instructions executable by the computer to perform the method steps for imaging and identifying non-viable myocardial tissue in a patient's heart, the method comprising the steps of:

~~A system for imaging a section of a patient's myocardium and identifying non-viable myocardial tissue, the system comprising:~~

~~magnetic resonance imaging equipment for obtaining DEMR images of the myocardium;~~

obtaining images of a section of the myocardium;

~~a computer processor for segmenting the section of the patient's myocardium into an endocardial border and an epicardial border; the computer processor further~~

dividing the a myocardial wall of the section of the myocardium into sectors; ~~the computer processor~~
measuring one or more selected features of the sectors of the myocardial wall; ~~and~~
applying the measured one or more features to a decision function to create a decision surface;
~~to determine~~ from said decision surface whether each sector contains viable or non-viable myocardial tissue; and
~~a display for~~ displaying an image that shows each sector of the myocardial wall and an indication of its viability.

16. (Currently Amended) The computer readable program storage device-system of claim 15 wherein the section of the myocardium is a left ventricle.

17. (Currently Amended) The computer readable program storage device-system of claim 15 wherein said features are selected from a group comprising a selected feature is image intensity, thickness of the myocardium, differential thickness of the myocardium, homogeneity of the myocardium, transmural of scar (non-viable) tissue, a position of the sector of tissue, a rate of contrast agent uptake, and material strain information from tagged-MR.

18-24. (Canceled)

25. (Currently Amended) The computer readable program storage device-system of claim 15 wherein the decision function that ~~creates~~ said decision surface is a function $f(\mathbf{x})$ that maps a multidimensional vector $\mathbf{x}$ formed of said selected feature measurements to a scalar real value indicative of whether a tissue sector is viable or non-viable.

26. (Currently Amended) The computer readable program storage device-system of claim 25 wherein said decision surface separates measurements identifying viable tissue sectors from non-viable tissue sectors.

27. (Currently Amended) The computer readable program storage device~~system~~ of claim 15 wherein sectors of viable tissue are displayed as a first color and sectors of non-viable tissue are displayed as a second color.

28. (New) The computer readable program storage device of claim 15 wherein the images are obtained using Delayed Enhanced Magnetic Resonance (DEMR) imaging.